

Appl. No. 09/904,360

Amdt. dated June 8, 2005

Reply to Office action of March 9, 2005

Remarks/Arguments:

Reconsideration of the application is requested.

Claims 1-21 remain in the application.

- Claims 1-3 and 8-11 are rejected under 35 U.S.C. § 102.
- Claims 4 and 12 are rejected under 35 U.S.C. § 103.
- Claims 5-7 and 13-20 are allowable.
- Claim 21 is allowed.

Applicants respectfully request that the Examiner reconsider the rejection of claims 1-4 and 8-12 as being anticipated by or obvious over Kameyama et al. (US 5,296,388, "Kameyama") under 35 U.S.C. §§ 102 and 103. The claimed invention is neither anticipated nor obvious.

There are two primary arguments that disqualify Kameyama: First, the reference does not produce a doping at a surface of the semiconductor. Second, the reference does not belong to the field of MOS (metal-on-silicon) transistors.

We begin with the anticipation rejection: Anticipation is established only when a single prior art reference discloses, expressly or under the principles of inherency, each and every

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element of a claimed invention. RCA Corp. v. Applied Digital Data Sys., Inc., 730 F.2d 1440, 221 USPQ 385 (Fed. Cir. 1984). W.L. Gore and Assoc., Inc. v. Garlock, Inc., 721 F.2d 1540, 1554, 220 USPQ 303 (Fed. Cir. 1983). That is, a claim is anticipated if a single reference, either expressly or inherently, discloses every limitation of the claim at issue. In re Schreiber, 128 F.3d 1473 (Fed. Cir. 1997).

Kameyama does not produce:

- a doping for a MOS transistor (claim 1, preamble)
- a doping at a surface of the semiconductor substrate (claim 1)
- a buried doping for a MOS transistor (claim 1).

Kameyama, therefore, does not anticipate the claimed invention under 35 U.S.C. § 102.

Kameyama discloses an implantation (112n<sup>+</sup>) of arsenic "through the amorphous silicon thin film 110," col. 8, lines 1-4; Fig. 2. The amorphous silicon thin film 110 is 35 nm thick and it is referred to as a first semiconductor thin film. Col. 7, lines 67-68.

Where the reference explicitly teaches ion implantation through a layer of amorphous silicon, one cannot state that

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the reference teach doping at a surface of the semiconductor. The Kameyama teaching, therefore, is contrary to the invention as it is defined in claim 1.

We have previously explained why the claimed invention would also not be obvious over the teaching of Kameyama, to wit: The advantage of producing a doping at the surface is that the doping profile can be made to be delta-shaped in order to provide a steep retrograde doping profile directly at the surface. The steep retrograde doping profile is perfectly suited for producing doping profiles of short channels of highly integrated CMOS transistors (see, specification).

Kameyama, in contrast, discloses the implantation of arsenic through an amorphous silicon film (110) with an acceleration energy of 60 to 100 KeV. Doping through such an amorphous silicon film does not generate a delta-shaped doping profile. Instead, it requires higher implantation energies and, therefore, generates a broad doping profile. Moreover, since the implantation of Kameyama provides a base for a bipolar transistor, col. 7, lines 59-63, there is no need for providing a delta-shaped doping profile directly at the surface, as an emitter covers the base. See, Fig. 3 with base layer 106P, emitter region 116n+). It is thus clear that a person of ordinary skill in the art would not be motivated to

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modify the Kameyama method to produce a doping at the surface of the semiconductor.

It is accordingly clear that neither Kameyama nor any other reference, whether taken alone or in any combination, either show or suggest the features of claim 1. Claim 1 is, therefore, patentable over the art.

In view of the foregoing, reconsideration and allowance of claims 1-21 are solicited.

If an extension of time for this paper is required, petition for extension is herewith made. Please charge any fees which might be due with respect to Sections 1.16 and 1.17 to the Deposit Account of Lerner & Greenberg P.A., No. 12-1099.

Respectfully submitted,



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